Commonwealth of Massachusetts
Office of Consumer Affairs & Business Regulation
Division of Energy Resources

RENEWABLE ENERGY PORTFOLIO STANDARD ADVISORY RULING

FOR

BURLINGTON ELECTRIC DEPARTMENT'S PROPOSED PROJECT TO RETOOL THE MCNEIL STATION IN BURLINGTON, VERMONT

June 17, 2004

1. Advisory Ruling Request by the Burlington Electric Company

Burlington Electric Company ("Burlington") has requested that the Massachusetts Division of Energy Resources ("DOER" or "the Division") provide an Advisory Ruling with regard to the qualification under the Massachusetts Renewable Energy Portfolio Standard (RPS) of two potential modification projects for its McNeil Station ("McNeil") in Burlington, Vermont.[1] This document is DOER's response to that request.

The RPS regulations, at 225 CMR 14.06(5),[2] provide an opportunity for a Generation Unit owner or developer "to request an advisory ruling from the Division to determine whether a Generation Unit would qualify as a New Renewable Generation Unit."[3]

2. Description of the Proposed Burlington Projects

The request from Burlington concerns two potential modification projects for the McNeil Station, a 1984 biomass Generation Unit in Burlington, VT. The first is to retool the Unit with fluidized bed technology to meet the "low-emissions, advanced biomass power conversion technologies" criteria of the regulations at 14.05(1)(a)6. McNeil has a traveling grate combustion system, a type of stoker combustion technology, that provides heat to a steam boiler powering a 50 MW steam turbine. The RPS regulations at 14.05 (1)(a)6 categorically exclude stoker combustion technology from RPS qualification. Pursuant to DOER's recent interpretation of its RPS regulations, if a retooled unit, previously ineligible under those criteria, is successful in meeting those criteria, then DOER would deem it qualified as a New Renewable Generation Unit (provided it meets all other relevant criteria, as well).[4]

The second potential modification would "revitalize and possibly expand the size of the attached Vermont Gasification Project." The latter is an advanced, biomass gasification project that fed its

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[1] The Burlington request was provided as a letter to Dwayne Breger at DOER, dated December 31, 2003 (received 1/5/04), hereafter referenced as the 12/31/03 letter. Additional information about an attached biomass gasifier (the Vermont Gasification project) was received in a letter dated May 5, 2004.

[2] Hereafter, all references to the RPS regulations will be to sections of 225 CMR 14.00.

[3] More information about Advisory Rulings for MA RPS is at http://www.mass.gov/doer/rps/advisory.htm.

[4] See DOER's *Guideline on the MA RPS Eligibility of Generation Units That Re-tool with Low Emission, Advanced Biomass Technologies*, dated April 16, 2004, and accessible at http://www.mass.gov/doer/rps/advbio.htm. Under the *Guideline*, the Vintage Waiver provisions at 14.05(2) cannot apply to units that use stoker combustion because a Vintage Generation Unit must meet all of the relevant requirements of 14.05(1)(a), which for a biomass unit categorically excludes the use of stoker combustion.

output biogas into the McNeil combustion chamber until operation of the gasification unit ceased in 2003 "due to the bankruptcy of its owner, FERCO" (Future Energy Resources Corporation). This request is for a Co-Firing with Ineligible Fuels Waiver.

This Advisory Ruling will address the proposed retooling project's fuels, technologies, and air emissions. The potential Co-Firing Waiver request is addressed separately in Section 6, below.

3. Qualification of the Fuel as Eligible Biomass Fuels

McNeil burns whole tree chips and woody debris from sawmill operations. Its air permit limits the biomass fuel stream to "only clean wood that is not contaminated with paints, preservatives or glues." Although it can operate at "100% load on natural gas [and] 30% load on distillate oil," the latter two "are used primarily for startup purposes." In addition, it can operate at 15% load on the biogas from the attached biomass gasification unit, which used the same biomass fuels as McNeil.[5] Provided that the fuel stream continues as described, DOER considers the fuels of McNeil and the gasifier to meet the definition of Eligible Biomass Fuel in the RPS regulations at 14.02.

4. Discussion of the Proposed Biomass Technology

The RPS regulations at 14.05(1)(a)6 provide that the qualification of biomass Generation Units is limited to "low-emission, advanced biomass power conversion technologies using an Eligible Biomass Fuel." These criteria are designed to insure that the RPS provides incentives for older, dirtier technologies to be replaced by cleaner and more efficient technologies. DOER also believes that biomass technologies should improve over time in response to the incentives created by the RPS, added to the other regulatory and market forces responsible for continued technological progress in the electricity generation sector generally.

Burlington is considering replacement of McNeil's current traveling grate combustion system with a new fluidized bed (FB) system, but they have not yet selected a type or vendor.[6]

Although already in commercial use for biomass applications for more than twenty years, fluidized bed technology is relatively young and still undergoing significant innovation and improvement with regard to efficiency, operation, cost, and emissions. In three recent Advisory Rulings – for the PSNH's proposed re-tooling and biomass repowering at its Schiller Station in New Hampshire, EcoPower's proposed new unit in Massachusetts, and Boralex's proposed retooling of one or the other of two biomass units in Maine – DOER already has determined that current FB technologies represent improvements over the early generation FB technology of the two 1986 Indeck boilers in Maine, and that the improved technologies proposed for those projects meet the "advanced technology" criterion of the RPS regulations.[7] Consistent with those determinations, and pending details submitted with a Statement of Qualification Application, DOER expects to determine that Burlington's proposed fluidized bed technology is likewise qualified as "advanced technology."

5. Discussion of the Project's Air Emissions

A Generation Unit using an Eligible Biomass Fuel and advanced technology also must meet the criterion of "low-emissions" in order to qualify a New Renewable Generation Unit for the RPS, per

[5] 12/31/03 letter.
[6] 12/31/03 letter.
[7] The Schiller, EcoPower, and Boralex documents can be accessed via links at http://www.mass.gov/doer/rps/advisory.htm. The Indeck plants are already qualified for RPS under the Vintage Waiver provision at 14.05(2)

the regulations at 14.05(1)(a)6. This criterion does not set specific emission targets. Rather, the threshold for eligibility is expected to become more stringent as biomass energy conversion and emission control technologies improve. In addition, that threshold might differ among fuels, technologies, project scale, and site-specific conditions – as determined by the MA DEP. Under the RPS regulations at 14.05(1)(a)6.a, a generator must receive a valid air permit from its appropriate state air quality regulatory agency to qualify as an eligible biomass generator. The same subsection also provides that the project "must . . . demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection."[8]

Burlington's 12/31/03 letter states that, whereas it has not yet selected a technology supplier, it cannot yet determine the emission rates of the retooled unit, except that they would not be more than the permitted and actual rates provided in the letter. Burlington "would like confirmation from DOER that emissions levels equal to or less than McNeil's actual emission levels would be eligible for Massachusetts RPS." Those actual emission rates are listed below.

Pollutant	#/MMBtu*	#/hr*	Tons/year
SO_2	0.0014	0.9	2.0
NO_x	0.1535	99.9	224.8
PM	0.0055	3.6	8.1
CO	0.42	274.0	616.4
VOC	0.012	7.9	17.8

*calculated values based on data provided to the VT Agency of Natural Resources

DOER cannot provide such confirmation: several of the emission rates per megawatt hour, notably those for NO_x and CO, are much higher than those provided in the PSNH and EcoPower requests for Advisory Rulings. The information provided by Burlington is too preliminary for a response more specific than just given. DOER's must further state that, in order to qualify as using a "low-emission" technology, the plant must, quoting the RPS regulations at 14.05(1)(a)6.a, "demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection." Thus, the burden of demonstration and the risk are borne by Burlington, and DOER advises the company to stay in touch with the air quality agencies of both Vermont and Massachusetts, as well as to monitor Advisory Rulings and Statements of Qualification at DOER's RPS web page.[9] In addition, DOER is likely to include emissions monitoring and reporting requirements as conditions in Statement of Qualification for any additional non-Massachusetts biomass units.[10]

6. Co-firing Biogas with Another Eligible Biomass Fuel

The second potential modification project presented in the 12/31/03 letter would "revitalize and possibly expand the size of the Vermont Gasification Project." Burlington asks, "If we burn gas derived from biomass gasification in a wood fired stoker boiler, will the energy produced by the bio-gas qualify under the Massachusetts RPS program?" The "Co-Firing Waiver" in the RPS regulations at 14.05(3)(b) provides that, "If using an Eligible Biomass Fuel, the entire Generation Unit must meet the requirements of a low emission, advanced biomass power conversion

[8] If the air quality regulations applicable in the jurisdiction where the unit is located do not require an air permit, then the unit must satisfy the requirements of the RPS regulations at 14.05(1)(a)6.c. This does not apply here.

[9] http://www.mass.gov/doer/rps/.

[10] Such conditions are included in the Statements of Qualification for the two Indeck plants and for Worcester Energy.

technology as set forth in 225 CMR 14.05 (1) (a) 6." In this case, as stated previously, McNeil does not currently meet those requirements, and, therefore, the share of McNeil's electricity output attributable to the co-fired biogas would not qualify as New Renewable Generation. However, if Burlington did modify the McNeil combustion system to qualify as "low-emission, advanced power conversion technology, as discussed earlier, then the output from the biogas *would* so qualify.[11]

7. Summary of Ruling

DOER makes two findings in this Advisory Ruling. One is that DOER would find Burlington's potential fluidized bed retooling project to fall within the eligibility criteria for biomass-fueled New Renewable Generation Units as provided in the RPS regulations at 14.05(1)(a)6, but only if the retooled unit met the "low-emissions" criterion. The other is that co-firing biogas from the attached Vermont Gasification Project into McNeil with its current stoker combustion system cannot qualify as New Renewable Generation, but it would so qualify if Burlington also undertook the retooling as described. The following summarizes the first finding and also notes several key issues and requirements for Burlington to consider in its project planning. In reviewing an eventual Statement of Qualification Application, DOER will also consider these issues and requirements.

1. DOER finds that the fuels of McNeil and of the attached Vermont Gasification Project meet the definition of Eligible Biomass Fuels in the RPS regulations. The fuel streams consist of whole tree chips, and clean sawmill woody debris. The incidental use of fossil fuels for cold starting the plant would not affect this finding.
2. DOER expects, pending details submitted with a Statement of Qualification Application, to determine that Burlington's proposed fluidized bed technology is qualified as "advanced technology." This finding is consistent with DOER's findings for the fluidized bed technologies in three other recent Advisory Rulings.
3. DOER will determine that the retooled unit qualifies as a low-emission unit if, and only if, Burlington also can "demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection," in addition to obtaining a Valid Air Permit from the Vermont Agency of Natural Resources (VT ANR). Therefore, DOER advises Burlington to maintain contact with the MA DEP, as well as meeting the requirements of the VT ANR, and also to monitor MA RPS Advisory Rulings, other MA RPS decisions, and MA DEP air permits subsequent to this Advisory Ruling.
4. Burlington should note that, while DOER may grant a Statement of Qualification for the proposed retooled Generation Unit, the RPS qualification of the plant always would be contingent on Burlington 's obtaining any required Vermont air permit(s) for the proposed retooling and on its operating the plant in compliance both with those permits and with DOER's RPS regulations, including all conditions of the plant's Statement of Qualification. Burlington should expect emissions monitoring and reporting requirements to be included among those conditions.
5. Finally, Burlington should note that, once DOER grants a Statement of Qualification, further advances in "low-emission, biomass power conversion technologies" would have no effect on the plant's MA RPS qualification.

[11] This finding omits considering a second possible issue, namely that the "Co-Firing Waiver" pertains explicitly to a "Generation Unit that uses an ineligible fuel in conjunction with an Eligible New Renewable Fuel." The fuel with which the biogas was and would be co-fired at McNeil is another Eligible New Renewable Fuel, not an ineligible fuel.